



THE SOURCE



NEWSLETTER OF THE NHDES DRINKING WATER SOURCE PROTECTION PROGRAM

WINTER 2000

Protecting Wells of the Future: Communities Using FGWA

The NHDES Drinking Water Source Protection Program has created several tools for use in developing protection measures on the local level. One recent development, the Favorable Gravel Well Analysis (FGWA), is being used by several municipalities and organizations around the state to take a proactive look at protecting groundwater sources that may be needed in the future.

For instance, the Rockingham Planning Commission (RPC) recently applied the technique to the entire Exeter River Watershed to identify potential areas for future water sources. While as much as 35% of this watershed is underlain by stratified drift aquifers, only 3.1% of the area is underlain by an aquifer with a transmissivity large enough to support a municipal well. Of this 3.1%, the FGWA process eliminates much of what remains because of quality constraints. In fact, RPC's analysis results indicate only eight general locations within the whole watershed that would be suitable for a siting a community well.

RPC's next step is working with the local member communities and the Rockingham Land

Trust to identify specific parcels in these locations. Once this is done, all parties will

begin discussions about what further protection measures (possibly easements or acquisitions) could be implemented in these locations.

Both the Planning and Public Works Departments of the City of Rochester are also putting the FGWA maps to work for several water protection projects underway in that city. At the present, Rochester's water supply comes from a surface water source. However, this past summer's dry weather and low reservoir levels highlighted the City's need to focus on planning for future water supplies. Therefore, the Public Works Department has hired a firm to investigate the possibility of either expanding to an additional surface water source or supplementing the present source with groundwater. The FGWA maps are proving particularly useful to the firm as they conduct the Phase I evaluation of the City's groundwater resources.

In addition, work is being done by the Rochester Planning Department to develop a city ordinance that will outline different measures intended to protect certain zones of the aquifer. The FGWA maps have helped the department focus on areas that are particularly susceptible to contamination and those areas where future supplies may be sited.

The Source Goes National (sort of)

The Source Water Protection Committee of the American Water Works Association has launched an internet-based newsletter. Aptly titled *The Source*, the newsletter's first issue was posted in September. AWWA's *The Source* will cover news of national interest (such as significant EPA water supply- and watershed-related announcements) as well as the activities of the AWWA Source Water Protection Committee. It can be viewed at <http://www.awwa.org/unitdocs/785/news2.pdf>.

What is Favorable Gravel Well Analysis?

Favorable Gravel Well Analysis is a technique developed to help water suppliers and community planners take into account quantity and quality constraints when analyzing stratified-drift

aquifer maps to review potential sites for new community wells. Often the FGWA maps show large areas underlain by stratified-drift aquifers which might be interpreted to mean that a community has a wealth of potential future sites for water supply wells. However, not all of this area is available for well siting as there are numerous regulations concerning where a well can be lo-

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Update on the Source Protection Program

Drinking Water Source Assessment Program

Plan: USEPA Region I has formally approved DES's plan, making New Hampshire the third state to earn approval. In his approval letter, EPA Region I Administrator John DeVillars praised DES's "vision for the program, coordination with others at the local, state and federal levels, and technical expertise."

NH Groundwater and Drinking Water Strategy:

The process of revising this strategy (formerly the Comprehensive State Groundwater Protec-

tion Program, or CSGWPP) moved ahead this fall. Following in-depth interviews with approximately forty stakeholders and program managers during the summer, DES developed a draft five-year work plan, held two meetings of an advisory committee, and began forming subcommittees to focus on specific tasks. The draft work plan addresses eighteen issues in three broad areas: prevention, education, and resource assessment. For more information or to get involved, contact Sarah Pillsbury at 271-1168 or Paul Susca at 271-7061.



Spotlight on... Merrimack Village District

The members of Merrimack Village District's (MVD) Wellhead Protection Committee strongly believe that public understanding of groundwater is necessary if people are to realize the role they play in protecting their drinking water. For this reason, the committee hired a public water educator and is creating a landscape tour at MVD's own offices showcasing landscaping alternatives as a model for residents.

"We hope it's going to make a major difference in the way people look at landscaping."

-Eileen Pannetier, MVD

Susan Homan, who was hired as the public water educator, is tackling groundwater protection from many different angles. One aspect of her work is classroom education including water education lessons at local schools and workshops for interested teachers. In addition, she is responsible for coordinating the publication of the semi-annual wellhead protection newsletter sent to all residents and assisting in the planning and implementation of the landscape project.

The landscape project is aimed at educating residents about how they can achieve handsome yards without excess watering and fertilizers. All plantings will be drought-resistant, hardy species native to the area. Only natural fertilizers will be used, along with a system of rain barrels and drip irrigation to utilize as much rainfall as possible. The District intends to offer tours of the grounds and to use it as a living classroom to conduct landscaping and lawn care workshops.

Because of its groundwater protection work on these and many other fronts, MVD was recently awarded designation as a Groundwater Guardian Community by The Groundwater Foundation, an international, non-profit organization whose mission is to educate the public about the nature and value of groundwater. With this award, Merrimack becomes the second community in New Hampshire to receive this designation, following Portsmouth last fall.



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Closer To Home

*Information for well owners and
public water system customers*

Detecting Bacteria in Your Well Water

Many people are surprised to learn that there are no state statutory requirements in New Hampshire for testing the water quality of private wells although certain water quality information must be disclosed during the sale of a home with a well. However, DES does have recommendations for homeowners with respect to a standard analysis of private wells. One of the most important water quality tests that homeowners can perform on their wells is a test of bacterial quality. DES recommends that homeowners perform this test annually.

The standard test used for determining the biological quality of drinking water is the total coliform test, used throughout the U.S. and the world. Total coliform is a group of bacteria known as indicator organisms. If present, total coliform indicate that there is a *possibility*, but not a certainty, that disease organisms may also be present in the water. When absent, there is a very low probability of disease organisms being present in the water. Because the total coliform test only indicates the possibility of a problem, it errs on the side of caution. Other benefits of this test are that it is easy to perform, inexpensive, and can reliably predict the bacterial safety of water relative to hundreds of possible diseases especially important as it would be impossible, in a practical sense, to test separately for every disease organism.

The DES laboratory in Concord will run bacteria tests of a homeowner's private well water for only \$10. In addition, there are other

laboratories around the state that are certified to test for bacterial quality, although their costs may differ.

To understand the best way to protect your well against bacterial contamination, you should understand how a well might become contaminated in the first place. Total coliform tests will come back positive whenever unfiltered water containing bacteria is able to enter the well. By far, the most common explanation is poor well construction. Other explanations include:

1. Contamination during pump replacement, plumbing repair, or almost any time work is done on the well.
2. Damage to the aquifer's filtration capacity.
3. Build-up of mineral deposits and biological material in pipes and tanks.
4. Human error in taking the sample.

Therefore, the best way to protect your well against possible bacterial contamination is to take steps to prevent unfiltered water from entering your well. This is most easily done by making sure that your well is properly constructed. Improperly constructed wells may show problems such as insufficient casing height, buried well heads, inadequate or leaky well covers or caps, and holes or unsealed joints. Fact sheets on proper well construction (WSEB-1-2 and WSEB-1-4) are available on DES's website and by calling 271-2975. In addition, any time that work is performed on your well, the system should be flushed and then chlorinated to clean the system of bacteria.

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cated. FGWA buffers out (based on state regulations) all potential and known contamination sources within an area underlain by stratified-drift aquifers and takes into account potential well yield (based on the community's estimated need) to show the actual area that is potentially suitable for siting a community well.

Two guides detailing the FGWA process are available from DES — one written for planners, water suppliers, and municipal officials and another for GIS operators. To receive copies of these guides or the FGWA maps for a particular town, contact Paul Susca at 271-7061.

Model Ordinances to Protect Water Quality

Need some help developing a local ordinance to protect your water resources? The U.S. Environmental Protection Agency-Office of Water's Nonpoint Source Control Branch has developed a reference tool for local government officials to help them craft local ordinances to protect water quality. To create an ordinance that effectively protects an aquatic resource while allowing for growth, check out the following site: www.epa.gov/owow/nps/ordinance/.

Governing officials can customize their existing or new ordinances using the examples on this web page. The site offers both model and real-life examples of ordinances that address numer-

ous topic areas including aquatic buffers, erosion and sediment control, open space development, operation and maintenance of stormwater controls, illicit discharges, and post construction runoff control. This site also includes supporting materials such as examples of meeting notices, inspection check lists, and performance bonds. There are also links to other helpful web pages.

On the state level, DES is developing a model rule for water supply watershed protection. More information on this will be available in the next issue of this newsletter (Spring 2000) or by contacting Paul Susca at 271-7061.

Comments about EPA's site should be directed to Rod Frederick, EPA, at frederick.rod@epa.gov

DES Works With EPA to Find Improper Discharges

Stormwater drainage systems are not supposed to carry water during dry weather. Dry weather discharges are a cause for concern because they often contribute substantial amounts of pathogens, nutrients, and toxics to water bodies. These discharges may come from such sources as illicit connections of sanitary or industrial waste pipes, infiltration of potentially contaminated groundwater into defective storm drains, and wash water from commercial and industrial operations. Unfortunately, dry weather discharges are not all that uncommon. When surveying coastal communities as part of the NH Estuaries Project from 1996-1999, DES found illicit sanitary sewer connections to stormwater systems *in every case*. A combination of volun-

tary compliance, administrative order, and lawsuits resulted in the removal of these illicit connections and improvements in water quality. For example, the elimination of four illicit discharges to Moonlight Brook in Newmarket resulted in a 90% reduction in *E. coli* levels.

Since October 1999, DES has been working with USEPA Region I staff to conduct dry weather discharge surveys in developed areas upstream of selected surface water supply intakes. The results will be used in the Drinking Water Source Assessment Program. The two agencies will also attempt to identify the sources of any improper discharges and bring them into compliance.

For more information, contact Paul Susca at 271-7061.

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